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ABSTRACT

Focusing on ABC, NBC, and CBS's evening news broadcasts from January 1984 through February 1986, a study examined network news coverage of environmental risk--defined as manmade chemical, biological, and physical agents that create risk in the indoor, outdoor, and occupational environments. Using the Vanderbilt University "Television News Index and Abstracts" as a database, 564 environmental news stories were studied for the extent of environmental risk coverage, the kinds of sources used, and the similarities and differences in coverage of major acute and chronic environmental risk stories. Environmental risk reporting was also compared to coverage of other risks. For this study, 12 environmental risk categories were created, consisting of three issue-oriented categories (Bhopal gas leak, acid rain, Agent Orange), five topical categories (including hazardous waste and oil/gas releases), and four broader categories (including air and water pollution). Coverage was assessed in terms of the number of stories, the length of stories, the number of field reporters used in the coverage, and the number of film reports produced. Results revealed that networks appeared to be using the traditional journalistic determinants of news (timeliness, proximity, prominence, consequence, and human interest) plus the broadcast criterion of visual impact to determine the degree of risk-issue coverage. Little relationship was found between amount of coverage and public health risk. (Three tables of data are included, and lists of the 12 types of environmental risk stories and sources, and 28 references are appended.) (MM)

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Network Evening News Coverage of Environmental Risk

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ABSTRACT

ABC, CBS, and NBC's carefully crafted and expensively produced evening news broadcasts devoted 1.7 percent of their air time to stories about manmade environmental risks during the period January 1984-February 1986. Nearly half of the 564 stories were 20-30-second briefs by a news anchor about oil spills, gas leaks, and other pollution problems. Longer two- to six-minute stories focused on major acute chemical incidents like Bhopal and an explosion at a liquified natural gas plant in Mexico City, and new legal and political considerations regarding familiar chronic disease problems like asbestos and Agent Orange. Little relationship was found between amount of coverage and public health risk. Instead, the networks appeared to be using traditional journalistic determinants of news (timeliness, proximity, prominence, consequence, and human interest) plus the broadcast criterion of visual impact to determine the degree of coverage of risk issues. Stories with an industrial or expert source were usually balanced by a citizen or environmental advocate source. Acute and chronic risk stories were found to be covered differently. Acute risk stories were reported in a clearly defined cycle, peaking on the second day with on-the-scene reports and film-clips of devastation. Later reports were shorter and emphasized legal and political considerations. An anniversary story was typical. Chronic risk coverage followed the release of new scientific, legal, or political information.

1. INTRODUCTION

Nuclear power, Bhopal, ethylene dibromide, saccharin, and chlorofluorocarbons are some of the hazards that raise questions about television coverage of environmental risk. The public does not know when to worry and when to relax, according to former EPA administrator William Ruckelshaus,[1] former assistant administrator Milton Russell,[2] state and local environmental and health officials,[3] corporations,[4] and national environmental groups.[5,6] Television, they say, is partly to blame.

Researchers have documented American television's lack of perspective, its tendencies toward appearance (rather than substance), conflicts and crises, and heroes and villains. For example, Sharlin[7] found that television missed the point of the ethylene dibromide controversy by focusing on acute risk to a few workers instead of long-term risk of chronic exposure to the general public. Adams[8] concluded that the severity of natural disasters predicted little about the nature of U.S. nightly television news coverage. Cultural proximity (defined as the number of U.S. tourists visiting a foreign country) was the strongest predictor of coverage. When it came to television news, one Italian was worth a dozen Asians. Ghiglione[9] claims that television, like film, is a "medium of mayhem." He wonders if television is promoting suicide and other forms of violent death, a suggestion supported by the work of Phillips.[10]

The controversy concerning the nature of television coverage is vitally important because the American public gets much of its news from television. Murch[11] reported that

73 percent of the public gets environmental news from television, compared to 62 percent from newspapers, and only 37, 21, and 12 percent from magazines, friends, and other sources, respectively. The National Cancer Institute[12] found that almost 60 percent of the population gets information about cancer prevention from television, compared to only 14 percent from physicians. Nimmo and Combs[13] reported that two-thirds of all Americans rely on television as their major news source—40 percent said it was their only source. Robinson and Levy[14] found that the public was most likely to remember dramatic news stories—stories involving real or potential danger. Television, because it is a visual medium, is particularly well suited for presenting drama and danger.

The deficiencies of the mass media concerning news coverage of science in general and risk in particular are the subjects of ongoing research. Nelkin[15] showed that the media have historically promoted science as a solution to society's difficult problems and that scientists have promoted themselves through the media. Bad news about science is new, and the media are not sure how to cover it. Slovic,[16] Fischhoff,[17] and Sandman, Sachsman, Greenberg, and Gochfeld[3] argue that the media operate under numerous constraints, including competitive pressure and inflexible deadlines and other time constraints, as well as a lack of scientific expertise. These limitations are compounded by the uncertainty of risk information, the lack of training for scientists in communicating with the media, the sometimes adversarial relationship between reporters and news sources, and the public's misperception of risks.

Given the importance of television news and the controversies surrounding questions involving coverage of risk, there have been relatively few attempts to determine exactly what is shown by the nightly network news broadcasts. Generally, researchers have focused on a few major stories and short time periods, thereby ignoring most of the coverage and the trends in that coverage. For example, Wilkins[18] used Bhopal to analyze television and other media coverage of a manmade disaster, and Nimmo and Combs[13] described crisis coverage through analyses of the 1978 Jonestown massacre in Guyana, the 1979 Three Mile Island event, the 1979 crash of a DC-10 near O'Hare Airport, the 1979 hostage taking in Iran, the 1980 Mount St. Helens eruption, and the 1982 Tylenol capsule poisoning in Chicago. The most complete media study related to risk up to this point is Singer and Endreny's[19] analysis of television and other media coverage of a sample of 1960 and 1984 hazard stories.

This article is a report of the first research project to analyze all environmental risk coverage by the nightly network news broadcasts for a period of more than a year. We analyzed coverage of every environmental risk story—564 across 26-months—presented on ABC, CBS, and NBC's evening news broadcasts during the period January 1984 through February 1986. This article describes the extent of environmental risk coverage, indicates the kinds of sources used, and examines the similarities and differences in the coverage of major acute and chronic environmental risk stories. Furthermore, it compares environmental risk reporting to coverage of other risks.

2. METHODS

The Vanderbilt University *Television News Index and Abstracts* was the source of data for this research. Vanderbilt, since August 5, 1968, has archived tapes of the ABC, CBS, and NBC nightly news broadcasts, and has abstracted and indexed every story in those broadcasts. These published abstracts were the data used in this project.

Although the three networks also carry news in the morning, during the day, and even in the middle of the night, the primary newscasts are the 22-minute evening news programs abstracted by Vanderbilt. These short but fully crafted and expensively produced television programs are the basis for the reputations not only of each news division, but of the networks themselves.

We chose a 26-month study period – January 1984 through February 1986 – for analysis of the abstracts. This time period was long enough to include a variety of environmental risk stories and to reveal recent trends in network coverage, and short enough to be a manageable size for exploratory research. Story length, the number and types of sources and reporters, and other data can be obtained from each abstract. The descriptions of the stories are sufficient to allow determination of the topics covered. Thus, we were able to make many meaningful comparisons (such as between acute and chronic environmental risk stories), but we could not use the abstracts to make any qualitative judgments about the individual stories (such as whether they are biased or whether they overstate or understate risk).

For the purposes of this research, we defined environmental risk as manmade chemical, biological, and physical agents that create risk in the indoor, outdoor and occupational environments. Thus, we excluded lifestyle factors (e.g., smoking, alcohol abuse, and drug use), genetic predisposition to disease, and ergonomic hazards (e.g., back injuries due to lifting). We defined acute risk stories as being about the health and environmental impacts of unexpected releases of hazardous substances into the air, water, and land, and chronic risk stories as being about the effects of routine exposures.

For coding and organizational purposes, we created twelve environmental risk categories. These included three single-issue categories where we anticipated substantial coverage (Bhopal gas leak, acid rain, dioxin/Agent Orange), five topical categories (hazardous waste, oil/gas releases, pesticides/fungicides, radioactivity, toxic chemical pollution), and four broader categories (other air pollution, other cancer/teratogen/mutagen, other water pollution, other manmade hazardous/toxic substances). Each of these categories was specifically defined (see Appendix 1 for the definitions of these categories).

For comparison with network television coverage of environmental risk issues, we analyzed three other risks: smoking/tobacco, earthquakes, and airplane safety and accidents. These provided three independent yardsticks against which to measure the coverage of environmental risk in general and of single issues like Bhopal in particular. The health and environmental impacts of most manmade environmental pollution risks are not well known.[20] We wanted to compare network coverage of these manmade risks with lifestyle,

naturally occurring, and other risks that produce either weak or striking images for the camera, are well-known to the press, and have been more precisely estimated by risk assessors.[21-23] Smoking tobacco represents a lifestyle risk that far exceeds all environmental risks in our study. However, smoking does not produce dramatic images for the camera and smoking is a familiar risk. Thus, while smoking is clearly an important news issue, we expected television coverage of smoking to be limited by the visual nature of the medium, and television's attraction to headline-grabbing events. Earthquakes can be a grievous hazard to nearby populations and produce spectacular scenes. Therefore, substantial coverage of serious earthquakes was expected. Airplane accidents kill a small number of people at specific places and times. Such accidents combine sudden, violent death with visual images of destruction, human tragedy, and sometimes drama. Furthermore, airplane accidents are a "set piece" for television journalists. They know that they are covering the biggest story of the day and that they are expected to provide harsh visual images of the crash scene and poignant visual images of family members caught in deep personal despair. We expected massive coverage.

We assessed coverage of these various topics in terms of the number of stories, the length of stories, the number of field reporters used in the coverage, and the number of film reports produced. (Every newscast has an anchor who both reads news stories and introduces reports and films. For our purposes, this anchor was not counted as a reporter.)

The tenor of network news stories, like all news stories, is determined as much by the nature of the sources used as by the reporters themselves. We wanted to determine which sources were influencing network news coverage and so we identified twelve types of sources and recorded for every story whether or not each type of source was cited (mentioned or shown on the air), and the number of times each type of source was shown on the air. Our source categories were: federal government, state government, county government, local government, foreign government, industry, workers, advocacy, citizens, experts, other, and can't tell (see Appendix 2 for definitions).

Each Vanderbilt abstract of every network evening news story for the 26-month time period was read and tested against our definitions to determine whether or not it concerned environmental risk or the other risk issues studied. One coder and the first author prepared initial coding instructions. A pretest failed and longer instructions were written. The second pretest achieved better than 80 percent agreement between two coders. Specifically, the coders achieved 90 percent reliability on story selection; 100 percent on which of 12 environmental risk categories a story belonged in; 88 percent on number of reporters; 83 percent on use of on-air sources; and 80 percent on sources cited. The first author resolved differences in the pretest and finalized the coding instructions. For the full content analysis, one coder read the abstracts from the odd-numbered months, and the other read the even-numbered months. One coder entered the data in a computer.

Since it was possible that a story might cover more than one subject (e.g., an airplane accident with radioactive cargo), we prepared two coding sheets for such stories and split

the time, sources, etc. Only four mixed stories were found in a data set of more than 1,200, so this double counting was not a problem.

After coding the stories, we found that some were follow-ups of original stories (e.g., Bhopal day two is a follow-up of Bhopal day one). Since network interest in an issue is very much reflected in terms of the number of such follow-up stories, we wanted to determine how many environmental risk stories ran for more than a day. Returning to the abstracts and coding sheets, we determined that a story separated by a week or more from a story on the same topic should be considered as an individual report rather than a follow-up story. The seven-day interval was chosen because we found that if a story came within a week of a story on the same topic, it frequently was about the same aspect of the same subject (e.g., two stories about asbestos in schools separated by four days). Stories more than a week apart, even if about the same general subject, usually focused on a different angle (e.g., asbestos in schools, worker exposure to asbestos, U.S. EPA regulation of asbestos, U.S. EPA suit against companies not following proper demolition practices). Furthermore, we observed that few environmental risk stories lasted more than a week, and that those that did were typically acute risk stories like Bhopal.

Our data set was the universe – not a sample – of all the story abstracts concerning environmental risk and the other risk issues studied for 26 months. Therefore, sample statistical testing methods were used only when we evaluated samples of the data.

3. RESULTS

The results are presented in four sections. We begin with an aggregate of all environmental risk stories, describing their number and length, the television networks that presented them, their use of field reporters and films, and the number that are multi-day. Section two analyzes the networks' use of environmental risk information sources. Then we examine the way the networks cover acute and chronic risk stories. And in the fourth section, our environmental risk stories are compared to the three other risk stories.

3.1 AGGREGATE RESULTS FOR ALL ENVIRONMENTAL RISK STORIES

The 26-month content analysis of all three networks found 61 Bhopal stories, 33 dioxin/Agent Orange stories, and only 19 acid rain stories. Among the topical categories, there were 117 oil/gas release stories, 110 radioactivity stories, 72 toxic chemical pollution stories, 32 pesticide/fungicide stories, and 28 stories concerning hazardous waste. Finally, 46 stories were coded as other air pollution, 17 as other cancer, 15 as other water pollution, and 14 as other manmade hazardous/toxic substances. These total to 564 environmental risk stories – an average of five a week or roughly one in every four network nightly news broadcasts. In the 26-month period that included Bhopal, environmental risk news consumed a total of 13.8 hours of air time on all three network evening newscasts – or only 1.7 percent of the air time in the networks' key nightly news programs.

Seventeen percent of environmental risk stories were presented on Saturdays and Sundays, considerably less than on the weekdays. (Twenty-nine percent would be expected if stories were uniformly distributed during the week.) A major reason for this weekday/weekend difference was that the networks sometimes did not broadcast nightly news on weekends. If each network had presented a news broadcast every night of the study, there would have been 2,370 broadcasts (790 x 3 broadcasts). Actually there were 2,165 broadcasts--205 fewer than the maximum possible. Ninety-eight percent of the missing newscasts were, in fact, missing from the weekends. (Preemption by weekend sporting events was the obvious cause.) But the smaller number of broadcasts did not completely explain the paucity of weekend environmental risk coverage. Weekend broadcasts were almost 30 percent less likely than weekday ones to contain environmental stories. The drop-off in weekend coverage affected short as well as long stories (see Bhopal in section 3.3).

The distribution of story lengths was bimodal – that is, there were two peaks. Forty percent of the stories were 20 and 30 seconds long, while 43 percent were 70 seconds to four minutes long. Only five percent were 10 seconds, five percent were 40 and 50 seconds, and fewer than eight percent were longer than four minutes. (The Vanderbilt index rounds story length to the nearest 10 seconds.) Thirty-two percent of the stories were multi-day stories. They were about half-again as long as stand-alone stories (averaging 112 seconds compared to 76). Half of the environmental risk stories had no field reporters and 46 percent had one. Only 4.3 percent used two or more reporters.

A disproportionate share of all environmental risk stories (44 percent) and of all air time (41 percent) was on CBS nightly newscasts. NBC presented 32 percent of the stories and 34 percent of the aggregate air time, and ABC showed 24 percent of all stories using 25 percent of the total air time. However, in terms of other important indicators (e.g., average time devoted to each story, number of reporters, number and types of sources, number of films, etc.), network coverage was very similar.

Two hundred sixty-one films were used in the 564 environmental risk stories. This represents about one film shown for every two stories, or a film-to-story ratio of .46. Acute risk stories (the Mexico City gas explosion, the nuclear waste ship accident, and Bhopal) were about four times as likely to include films as chronic risk stories (asbestos, Agent Orange, and EDB).

Tying these descriptive data together, the modal environmental risk story was a 20-second report by an anchor about an oil spill. A less typical, but common, story was a two- to three-minute description by an anchor and field reporter, including film, of a major chemical release or a chronic disease problem.

3.2 ENVIRONMENTAL RISK NEWS SOURCES

Reporters are trained to balance competing viewpoints. We hypothesized that they would use a citizen or advocacy group source when they used an industrial or an "expert" source. (Experts in this data set are usually scientists or lawyers representing an interest

group or an academic science perspective – see Appendix 2 for a definition.) We believe that reporters would feel less compelled to find a second source for balance when the first source represented a government agency.

Seventy percent of the stories cited (mentioned or showed on the air) at least one type of source (e.g., federal government, citizen, etc.). Thirty percent cited no specific news source at all. Twenty-eight percent cited one type of source, 19 percent cited two, and 23 percent cited three or more different kinds of sources. The federal government was the most frequently cited kind of source. There were 833 different types of sources in 564 stories, an average of 1.48 source categories per story (Table I).

Sixty-seven percent of the environmental risk stories showed at least one source on the air. Thirty-three percent showed no sources on the air. Twenty-six percent showed one source, 18 percent showed two, and 23 percent showed three or more news sources on the air. Citizens were most frequently shown on the air. There were 863 news sources (not necessarily different kinds of sources) on the air, an average of 1.53 on-air news sources per story (Table I).

Table I compares the number of on-air sources and the number of stories in which a source is cited at least once. Ratios exceeding 1.0 imply that a particular kind of source tends to be shown on the air when it is cited. Ratios less than 1.0 mean that the source is often cited without being shown on the air. Citizens, experts, and workers, if used at all, tended to be shown on the air. Federal, state, and foreign governments, as well as industry, were often cited in the stories without appearing on the air.

Cohen[24] developed the Kappa statistic to measure the extent of agreement of nominal-scaled data. Kappa ranges from 0 to 1. A 1 would mean a perfect match – that is, whenever at least one citizen is cited, so is at least one expert. We calculated 90 Kappa values: 45 for sources cited (10 sources x 9/2) and 45 for on-air sources. Eleven of the 45 Kappas for citing sources and 10 of the 45 for showing them on the air were statistically significant at values of $p \leq .05$ (Table II).

As expected, citizens and industry were at the junction of most of the significant Kappas. When citizens were used, it was usually with industry, experts, and state government. When industry was paired, typically it was with citizens, advocates, and state government. In conclusion, when the networks used two or more sources (about 40 percent of the stories), they tended to feature industry, citizens, and experts. Federal government officials, the most widely cited source, tended to be used alone.

3.3 COVERAGE OF ACUTE AND CHRONIC RISK STORIES

Graber[25] and Nimmo and Combs[13] report little information on stages of acute risk coverage, and we found no literature on stages of chronic risk coverage. However, we expected that the differences between acute events and chronic issues in terms of the basic television news values of timeliness and visual impact would result in differences in coverage.

We expected the following differences in coverage of acute versus chronic risk stories: Acute (e.g., emergency) stories are expected to have a clearly defined cycle (usually across one or two weeks), to peak on the second day with details of devastation from eyewitness accounts, and to have an "anniversary" story a month or a year after the emergency. Chronic risk stories are expected to be relatively short and to appear whenever there is new scientific data or regulatory/legal actions.

The expected acute risk coverage begins with brief bulletins, moves quickly to long death and devastation stories, then changes to shorter stories focusing on blame and political/legal issues. Chronic risks, when already known, are expected to result in stories that are mostly about regulatory/legal issues related to science and health.

To test our hypotheses, we chose the Mexico City gas explosion, a nuclear ship accident, and Bhopal as the acute risk stories to consider, and asbestos, Agent Orange, and EDB as the chronic risk stories. Twenty-six percent of our environmental risk stories (148 of 564) and 35 percent of the broadcast time (4.9 hours out of 13.7 hours) were about these six topics. As measured by coverage, they were the "biggest" acute and chronic environmental risk stories (Table III).

The Vanderbilt abstracts provided accurate data about story length, the number of reporters, and the number of sources, but being abstracts they could not be complete regarding the subjects discussed in an individual report. Furthermore, we are not entirely confident of the accuracy of the abstracts or their titles because indexers may be inconsistent in their writing of abstracts and titles. A study of the full transcripts would result in a more complete analysis of the subjects discussed, but since television news stories do not come with titles, such titles will always be subjective. This is an exploratory study. We depict stories as passing through phases of coverage, and we depend on the titles and abstracts as well as the quantitative data for our depictions—despite the limitations of the index.

Mexico City Gas Explosion

Coverage of the injuries, deaths, and devastation caused by an explosion at a liquified natural gas processing plant began on November 19, 1984 with stories averaging about 90 seconds. Initial estimates of deaths and injuries were reported and films were shown. On the second day, the average story increased to four minutes, updated information on the death and injury tolls, and included eyewitnesses, company representatives, and public advocates. Stories were shorter (averaging 93 seconds) on the third day. They emphasized government efforts to provide relief. Films were the only visual support; no sources were shown on the air. Coverage ended a few days later with two stories of 90 seconds each depicting the mass burial of the dead, criticism of the company and government, and descriptions of people's efforts to recover.

The gas explosion story was an almost perfect model of our expectations of acute story coverage. It was covered in a week, with the peak coverage coming on the second day when crews could get films and interview sources. Films were the major support (10 of 11 stories). Citizens were the only major on-air source (4 in 11 stories). Blame and legal/political dimensions were clearly secondary until the third day, and even then were not stressed. No

lawyers and only one advocate appeared on the air. One expectation was not met. There was no follow-up or anniversary story, perhaps because the gas explosion was overshadowed by the major 1985 Mexico City earthquake.

Nuclear Waste Ship Accident

On August 26, 1984 a French freighter with a cargo of nuclear waste bound for the Soviet Union sank in the North Sea near Belgium. The first-day stories averaged 90 seconds. Story length increased to about two minutes on the second day as the media tried to explain the confusion about the seriousness of the problem. Coverage never expanded because there was no evidence that the nuclear cargo was leaking. A week after the accident, 30-second stories reported the beginning of salvage operations. This coverage did not fade away and, in fact, peaked again because bad weather hindered the salvage and threatened to dump the nuclear waste. The story ended one month after it began with reports of the salvage operation.

The coverage met our expectations in two ways. Most of it was presented in two weeks, and there was a follow-up two weeks after the main story ended. All the elements—risk, blame, and politics—were introduced. As expected, films of the shipwreck dominated, although the longest story focused on the absence of rules for shipping nuclear materials. Coverage did not follow our expectations in one way. There were two peaks, not one. One, as expected, was on the second day. The second peak was during the second week. In fact, the two peaks corresponded to the two peaks in environmental risk, when the cargo could have been discharged.

Bhopal

The Bhopal tragedy was responsible for two hours and 27 minutes of network evening news coverage—nearly 18 percent of the environmental risk coverage in the 26-month period. Nevertheless, it fit our expectations of acute risk coverage almost perfectly. The story began on December 3, 1984 with three stories averaging two minutes each, reporting the release of methyl isocyanate (MIC), and including initial responses from Union Carbide's spokesperson and from advocacy groups. The longest stories were on the second day. Averaging six minutes and 50 seconds, these stories reported the death tolls, and showed films of the devastation, eyewitness accounts from citizens, and more industry comments. As expected, average story length dropped on the third, fourth, and fifth days to four minutes and 10 seconds, three minutes and 10 seconds, and three minutes, respectively. The focus shifted from death tolls and the comments of citizens and physicians to the arrest of Union Carbide's president in India.

One story was presented on the next day, a Saturday, and two on Sunday because ABC and CBS had no evening newscasts on Saturday, December 8 and CBS had none on Sunday, December 9.

There were three stories on Monday, December 10, but they were shorter (averaging two minutes and 50 seconds), as the focus shifted to blame, politics, and lawsuits. The poten-

tial for similar accidents in America, especially in West Virginia where MIC was also manufactured, was discussed.

After the second week, the emphasis of the stories shifted and their length decreased. January through March 1985 produced only nine stories averaging 90 seconds each. These stories focused on lawsuits, Union Carbide's investigation into the cause of the disaster, and its conclusion that Indian employees and perhaps sabotage were responsible. Four months after the MIC release – March 1985 – the stories shrank to an average of 30 seconds and covered a chlorine leak at Bhopal and the opening of the U.S.-based litigation against Union Carbide. Lawyers replaced films, citizens, and industry representatives as on-air sources. A year after the accident, on December 2, 1985, NBC broadcast a four-minute-and-thirty-second review. Two reporters described the devastation, but the sources were attorneys.

Overall, even given the enormity of the emergency, Bhopal fit our expectations of acute risk coverage almost perfectly. Massive coverage peaked on the second day. The longest stories described devastation and were followed by shorter stories about blame, laws, lawsuits, and politics.

Asbestos

In January, February, and September 1984, the U.S. EPA was criticized for failing to insist that asbestos be removed from schools, for not seeking federal money for asbestos removal, and for expecting local governments to pay for the cleanup. Asbestos companies sued their insurance companies in March 1985 over compensation awards. In Fall 1985, EPA proposed to phase out all asbestos products. In January 1986, EPA sued companies that renovate or demolish buildings without following asbestos control rules.

Asbestos fits our expectations of chronic risk coverage. Stories about asbestos appeared periodically and were relatively short (20-230 seconds). The longest stories focused on political/legal/regulatory issues.

Agent Orange

This plight of Vietnam veterans was covered by almost two dozen stories over a nine-month period from January to September 1984. The Agent Orange story passed through five phases. The first occurred in the last week of January 1984 when two stories (for a total of five minutes and 20 seconds) discussed health effects as part of longer stories about pending federal legislation to help Vietnam veterans. Phase two occurred one month later when the results from a U.S. Air Force study of health effects were presented (in eight minutes of television time). Fourteen minutes were devoted to the third phase, an out-of-court settlement between veterans and the producers of Agent Orange. Veterans and lawyers were featured during this phase. The fourth phase was from August 8 to August 16, 1984 when seven minutes of news coverage described the Centers for Disease Control study of Vietnam veterans and congressional hearings. The last major phase, in September 1984, consisted of four short stories (20-30 seconds each) on a judge's approval of a settlement between veterans and the companies. Later stories reported a veteran's fears for his children's health and a court ruling about the maximum award to a veteran.

The Agent Orange stories matched our expectations. Coverage was in distinct phases separated by a month or more. Nearly all the stories were short. The two stories longer than five minutes focused on legal/political issues.

Ethylene Dibromide

Ethylene dibromide was a widely used fumigant. In mid-January 1984, the media learned that EDB was being used to protect stored grain. Furthermore, EDB was being found in bran muffins, albeit in low concentrations. The networks presented a total of five minutes and 30 seconds of stories during this initial phase. The story peaked during the period January 31-February 3, 1984, when EPA was criticized for not taking action earlier, and for allowing water supplies to be contaminated. During this period television presented dramatic images such as workers rushed to a hospital, rather than concentrating on the long-term, general public exposure issue.[7] Procter and Gamble voluntarily removed products from California stores because of high EDB readings. EPA began ordering the phase-out of EDB use on a variety of products. Twenty-five minutes were devoted to nine EDB stories, including two that were five minutes long. In early March, each network ran a 20-second story. The last story was shown in August when EDB was found to be on mangos imported into the United States.

EDB did not fit our expectations of chronic risk coverage in two ways. It was covered like an emergency (85 percent of the air-time was in one week), and there was a peak for two consecutive days. EDB was at least as much a risk story as a political/legal one, which was not expected of a chronic risk story. Our expectations of a chronic risk story were met by the EDB coverage in that the longest stories were political/legal ones.

Network treatment of EDB suggests that chronic risk stories are covered as acute (event) stories at first—especially if journalists are shocked by the new information (as demonstrated by the film of workers rushed to a hospital). When the chronic risk becomes familiar and institutionalized as a category (e.g., asbestos)—and journalists realize that it is an issue and not an event—then reporting follows the chronic risk coverage profile. In fact, journalists (who judge stories in terms of their news pegs rather than in terms of acute versus chronic risk) might argue that in January and February 1984 the news about EDB was acute (that the EDB story started with a series of "acute" news pegs). Perhaps the correct interpretation of the EDB coverage is that a chronic risk issue that is introduced to the media via acute news events will be initially treated by journalists as an acute risk story.

In summary, with the exception of EDB, our expectations about the differences between acute and chronic risk stories were confirmed. The EDB case suggests that there may be two phases of chronic risk coverage: an initial learning phase in which the issue is first treated as an acute risk and a later phase where it is covered as a chronic risk story.

3.4 COMPARISON OF ENVIRONMENTAL RISK AND OTHER RISK STORIES

This section compares network evening news coverage of smoking/tobacco health risks, earthquakes, and airplane safety and accidents with coverage of environmental risk issues.

We chose tobacco because we wanted to see how television covered a hazard clearly more dangerous than all of the other types of risk in our research, but one that does not produce spectacular visual images. The coverage clearly did not match the risk. There were only 57 stories about smoking/tobacco health risks compared to 564 about environmental risks, 100 about earthquakes, and an incredible 482 about airplane safety and accidents. In terms of comparative risk, the contrast between network coverage of smoking and coverage of airplane safety is particularly striking. If there were a strong correlation in television news between coverage and risk we would expect exactly the opposite number of stories, at the very least. But television covers news using criteria[26] (timeliness, proximity, prominence, consequence, human interest, and visual impact) generally very different from those involving risk. Smoking is a dull chronic story with no visual impact, while airplane accidents are the very stuff of television.

About half the tobacco stories were two minutes or longer. These generally had strong "news pegs," attributable to Surgeon General Everett Koop's strong statements about smoking, the American Medical Association's equally strong positions against cigarette advertising, and a set of stories about the health effects of smokeless tobacco. Tobacco appears to be "old hat" news, deserving coverage only when new controversial data or opinions are offered by sources, thus providing a fresh "news peg" for an old story.

Only 11 films were shown in the 57 tobacco stories, by far the lowest film-to-story ratio of any of the non-environmental risk issues (0.19). These figures demonstrate that tobacco is not an inherently visual story, and perhaps that most television news producers are not out looking for new visual angles for the story. Citizens, experts, the federal government, and industry accounted for 75 percent of on-air sources.

Major earthquakes in populated areas attract coverage because people are killed, hurt, and driven from their homes. Earthquakes also produce some of the more dramatic images that await the camera's eye. Among environmental risk stories, we expected and found similar coverage only of Bhopal. Bhopal was covered like the September 1985 Mexico City earthquake – that is, with long stories and many reporters (Table III). Even the numbers of stories were similar, with 61 for Bhopal and 52 (out of 100 total earthquake stories) for Mexico City. The only obvious difference between this major earthquake and the Bhopal story was camera coverage. The film from Mexico City showed how nature could devastate an area. Camera coverage of Bhopal showed tragedy and devastation as well, but it also included company spokespersons and their explanations. Mexico City was in fact the most visual of stories, with a film-to-story ratio of 1.33, much higher than that of any other issue, including Bhopal (0.57) and airplane safety (0.55).

The crash of a military plane in Newfoundland produced the three longest stories (ranging from nearly eight to nine and a half minutes each) in our file of more than 1,200 stories,

and crashes in Dallas and India also resulted in long stories. But such long airplane crash stories were unusual, and as a group, if Bhopal and earthquakes were television's novels, then airplane accidents were its novellas. The 482 stories (more than four times as many stories as any other risk topic) were generally short (only 32 percent were two minutes or longer and half were 30 seconds or shorter), and, on average, used few field reporters (average 0.53) and on-air sources (average 1.27, see Table III). Films highlighted the spectacular devastation of airplane accidents (one film for every two stories); citizens testified to the destruction (32 percent of on-air sources); and the federal government and workers tried to explain what happened (30 and 28 percent, respectively, of on-air sources). Since there is no environmental risk equivalent to airplane accidents in terms of disastrous frequency, we expected a larger number of airplane stories than those of any other issue. But we did not anticipate the extraordinary extent of the coverage that was given to these repeated scenes of death and devastation.

4. CONCLUSIONS: COVERAGE AND RISK

Risk as calculated by scientists had little to do with the amount of coverage provided by the three networks' evening news broadcasts. Instead, the networks appear to be using the traditional journalistic determinants of news (timeliness, proximity, prominence, consequence, and human interest)[26] plus the broadcast criterion of visual impact to determine the degree of coverage of risk issues. These journalistic news values focus reporters on events rather than issues, and on the spectacular rather than the chronic. Although journalists sometimes provide excellent coverage of long-standing chronic risk issues, they often need an "acute" news peg consisting of new and timely information on which to base their coverage. An airplane crash is the quintessential television story, and the topic of airplane safety and accidents received much more coverage than any environmental risk issue and almost as much coverage as all manmade environmental risk issues combined during the 26-month test period, which included Bhopal.

In terms of the importance of providing risk information to the public, the 13.8 hours (1.7 percent) of network evening news time devoted to manmade environmental risk issues – in 26 months – seems very little, and the emphasis on the spectacular rather than the chronic appears disproportionate. This is compounded by the fact that chronic risk issues do not have the high visual impact of catastrophes. Network evening news coverage surely tends to reinforce the public's overestimation of the impact of acute risk events and underestimation of most chronic risk issues. The public's conception of risk is almost certainly distorted by television's focus on catastrophes and its dependence on films.

In terms of the sources used for risk information, journalists try to balance competing viewpoints, except where the source is the "official word" of the federal government. But they do not seem to be trying hard enough. The average environmental risk story cites fewer than two different kinds of news sources (1.48), and cannot help but miss many important perspectives.

Network television journalism, with its emphasis on the visual, tends to cover stories – especially acute risk stories – in a predictable manner. Acute risk stories peak on the second day – the day that film is most often available. Most stories, including chronic risk stories, are hung on "acute" news pegs, on journalistic values rather than risk assessment criteria.

For the networks, an environmental risk story is just one item that must compete for seconds within the 22-minute evening news broadcast. As long as this competition is judged in terms of news values and visual impact, with little thought to risk, and as long as the evening newscasts are only 22 minutes long, there is no reason to expect any major changes in the coverage of environmental risk issues. But even given the news values and time constraints of the networks, the public can and should be provided with a greater variety of kinds of news sources, and a better understanding of the risks involved in chronic environmental problems. The networks should look for at least three different source perspectives for every environmental risk story, and they should make conscious efforts to search for the interesting and visual aspects of chronic risk stories.

Journalists should try as hard as possible to present accurate reflections of reality. While this "mirror model" of the news-reporting process[25] can never be fully achieved, and is not universally accepted, it is the goal of many journalists. In terms of network evening news coverage of environmental risk, the "mirror model" justifies the argument for a greater variety of source perspectives and a more risk-oriented approach to news.

For risk assessment experts, the goal of risk communication is almost always an accurate reflection of reality – this same "mirror model" of communication. Risk assessment experts can overcome the limitations of television news criteria, which emphasize the visual and the acute, by making chronic risk information more visual. For example, the National Cancer Institute's *Atlas of Cancer Mortality*[27] (with its red, orange, and yellow colored maps identifying high cancer areas in the United States) attracted widespread media attention; whereas, the earlier telephone book-like[28] presentation of the same data attracted virtually no media attention. Making chronic risk information more visually appealing will help risk assessment experts break through the barriers of television news and help provide the press and the public with a more accurate perspective of risk.

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Appendix 1

Twelve Types of Environmental Risk Stories

Single-issue Categories

1. *Bhopal Gas Leak*. The gas leak and all follow-up stories.
2. *Acid Rain*. Sources and environmental impacts, as well as political implications of acidification of water bodies, and other natural habitats.
3. *Dioxin/Agent Orange*. Health and environmental impacts, as well as legal and political actions resulting from the application of Agent Orange during the Vietnam War; includes dioxin contamination of places (e.g., Times Beach, Missouri, etc.).

Topical Categories

4. *Hazardous Waste*. Stories about toxic waste landfills; damage resulting from leaks into ground and surface water bodies; possible health effects in Woburn, Massachusetts; Riverside, California; Niagara Falls, New York; etc.; organized crime and dumping; and U.S. EPA rules for disposal.
5. *Oil/Gas Releases*. Oil or natural gas spills, leaks, or explosions, fuel tanker accidents, oil refinery fires, etc.
6. *Pesticides/Fungicides*. Pesticides, herbicides (except Agent Orange), fungicides such as EDB, temik, malathion, etc.
7. *Radioactivity*. Safety and accidents at nuclear power stations; radioactive waste management; radioactive materials; shipping accidents involving radioactive materials; health impacts of nuclear testing; legal and political controversies. Stories about nuclear energy plant openings or economics of the industry are not included when risk is not mentioned.
8. *Toxic Chemical Pollution*. Chemical spills and gas leaks; truck and train collisions; spills where air or water contamination was not mentioned. This group does not include Bhopal, hazardous waste, pesticides, radioactivity, and oil/gas and chemical releases where contamination was mentioned.

Broad Categories

9. *Other Air Pollution*. Asbestos, benzene, black and brown lung, destruction of the upper atmospheric ozone layer; lead in gasoline; National Parks and air pollution; legal and political issues associated with these topics and the Clean Air Act. Stories about acid rain and Bhopal are not included.
10. *Other Cancer/Teratogen/Mutagen*. Carcinogens, mutagens, teratogens that are not included under dioxin/Agent Orange, hazardous waste, pesticides, and radioactivity. Includes microwaves and cancer, and Russian use of nitrophenyl pentadien to track American embassy personnel.
11. *Other Water Pollution*. Pollution of surface and groundwater from viruses, sewage contamination of the Ganges River, contaminated sewer systems, leaking underground storage tanks, etc. Does not include water pollution from dioxin/Agent Orange, hazardous waste, oil/gas releases, pesticides, and radioactivity.
12. *Other Manmade Hazardous/Toxic Substances*. A residual category for stories that do not fit any of the other categories, e.g., chemical and germ warfare, neurotoxins, law suits against chemical plants for an occupational exposure.

Appendix 2

Twelve Types of Sources

1. *Federal government.* Federal agencies (e.g., Federal Aviation Administration, Environmental Protection Agency, Nuclear Regulatory Commission, Department of Transportation, etc,); senators, congressmen, the President, federal employees, the Supreme Court.
2. *State government.* Representatives of state agencies, governors, state courts, state officials, etc.
3. *County government.* Representatives of county agencies, county inspectors, county officials, county boards, etc.
4. *Local government.* Police officers, mayors, city officials, public school officials, etc.
5. *Foreign government.* All foreign government officials.
6. *Industry.* Company spokespersons, officers; industry-sponsored institutes and trade groups; public utilities.
7. *Workers.* Those affected while working; e.g., members of unions, soldiers and veterans, anyone clearly identified as a worker.
8. *Advocacy.* Citizen groups, environmental groups (e.g., Environmental Defense Fund, Natural Resources Defense Council, Sierra Club, American Lung Association, Audubon Society), etc.
9. *Citizens.* People, victims, named people with no title or affiliation who are not coded in other categories.
10. *Experts.* Persons with scientific, technical, or legal expertise (e.g., lawyers, doctors, scientists, engineers). Previous research[3] defined experts as people contacted by reporters because of their reputations as neutral sources. Using this earlier definition, experts would not be affiliated with a party to a conflict. It was not possible to use this same definition with the abstracts because expertise was indicated, but affiliation was frequently not. To be consistent, doctors, lawyers, engineers, and scientists were classified as experts. Compared to our previous research, experts are overestimated and industry underestimated.
11. *Other.* Involved as more than just a bystander and can be clearly identified, but is not able to be classified in the previous categories (e.g., professional athletes, lifeguards, Mother Teresa, artists, the media).
12. *Can't Tell.* More involved than a citizen, but not a source you can identify; e.g., "an official" or a person being quoted who is more than a citizen but not given a specific title.

Table I. Sources Cited and Shown On-Air in Environmental Risk Stories

Sources[a]	No. of stories cited at least once[b]	% of all stories[c]	No. of times shown on-air	% of all on-air sources[d]	Shown /Cited
Federal govt	193	34.2	134	15.5	0.69
State govt	55	9.8	48	5.6	0.87
County govt	5	0.9	5	0.6	1.00
Local govt	29	5.1	31	3.6	1.07
Foreign govt	45	8.0	24	2.8	0.53
Industry	139	24.6	114	13.2	0.82
Workers	46	8.2	64	7.4	1.39
Advocacy	65	11.5	59	6.8	0.91
Citizens	130	23.0	219	25.3	1.68
Experts	87	15.4	122	14.1	1.40
Other	31	5.5	33	3.8	1.06
Can't tell	8	1.4	10	1.2	1.25

[a]See Appendix 2 for definitions of these sources.

[b]The cited sources column includes sources mentioned or shown on the air; the shown on-air column is a count of all sources shown on the air.

[c]Based on 564 stories.

[d]Based on 863 on-air sources.

Table II. Agreement of Sources Cited and Shown on the Air

Sources	Cited		Shown on air	
	Kappa[a]	*p*	Kappa	*p*
1. Citzens and experts	0.26	0.01	0.21	0.01
2. Citizens and industry	0.26	0.01	0.16	0.01
3. Citizens and state	0.18	0.01	0.14	0.01
4. Industry and advocates	0.15	0.01	0.24	0.01
5. Experts and advocates	0.14	0.01	b	b
6. Experts and workers	0.10	0.05	0.07	0.05
7. State and industry	0.09	0.05	b	b
8. State and workers	0.09	0.05	b	b
9. Industry and local	0.09	0.05	0.10	0.01
10. Federal and workers	0.07	0.05	0.11	0.01
11. Citizens and local	0.07	0.05	b	b
12. State and county	b	b	0.08	0.05
13. State and federal	b	b	0.13	0.01
14. Industry and federal	b	b	0.19	0.01

[a]Kappa ranges from 0 (no agreement) to 1 (perfect agreement).

[b]Kappa value not significant $p \leq .05$. Ninety Kappa values were calculated, only 21 Kappa values are shown in this table. The other 69 Kappa values were not significant $p \leq .05$.

Table III. Summary Data About Acute and Chronic Environmental Risk Stories, and Smoking, Earthquake, and Airplane Accident Stories

Story	Number of stories	% < 2 minutes	Avg. No. field reporters	Avg. No. on-air sources	Avg. No. films
All environmental risk	564	35	0.55	1.53	0.46
Mexico City Gas Explosion	11	36	1.18	1.45	0.91
Nuclear Ship Accident	23	13	0.48	1.22	0.61
Bhopal	61	61	0.88	2.25	0.57
Asbestos	15	27	0.60	1.60	0.27
Agent Orange	22	41	0.64	2.50	0.18
Ethylene Dibromide	16	44	0.81	2.25	0.12
Smoking/Tobacco	57	48	0.61	1.95	0.19
Mexico City earthquake	52	69	1.06	1.71	1.33
Airplane accidents	482	32	0.53	1.27	0.55